

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKIRA OKAYAMA, MICHIIYA OKADA, TADAOKI MORIMOTO,
TOSHIMI MATSUMOTO, YOSHIMI YANAI, HIROSHI SATOH, TOSHIYA DOI,
KAZUhide TANAKA and TAKAHIKO KATO

Appeal No. 1998-2756
Application No. 08/448,137

HEARD: February 9, 2000

Before PAK, WARREN and WALTZ, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 8, 10 through 12, 15 and 18, which are the only claims remaining in this application.

According to appellants, the invention is directed to a method for producing an oxide-type superconducting flat wire comprising a step of filling a metal tube with an oxide having a superconducting property, drawing the tube into a rod wire

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having a round cross section, cold rolling the rod wire into a flat wire such that the reduction in thickness is equal to or more than about 90%, and heat treating the wire to sinter the superconducting oxide (Brief, pages 3-4). Claim 8 is illustrative of the subject matter on appeal and is reproduced below:

Claim 8. A method of producing an oxide-type super-conducting flat wire having a critical current density of at least 1,000 A/cm², comprising an oxide layer having a superconducting property and a metal layer surrounding the oxide layer and has so flat a cross section vertical to the longitudinal direction of the wire that the upper and lower lines between the oxide layer and the metal layers appearing on the cross section having a zone over which they are parallel to each other, the thickness of the oxide layer being cold rolled in the range of about 0.40 to 0.75 based on the whole thickness of the wire, said whole thickness being about 0.2 mm or less, and said metal layer being deformable to follow the shrink deformation of the oxide layer when heat treated to be sintered, but rigid when used, which comprises filling a metal tube with an oxide powder having a superconducting property, drawing the tube into a rod wire having a round cross section, then cold rolling the rod wire into the flat wire so that $(t_i - t)/t_i \times 100$ is equal to or more than about 90%, wherein t_i is the whole thickness of the cross section of the rod wire before the cold rolling and t is the whole thickness of the cold-rolled flat wire, and then heat treating the flat wire to sinter the superconducting oxide.

The examiner has relied upon the following references as evidence of obviousness:

Saur

3,243,871

Apr. 5, 1966

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Jin et al. (Jin), "High T_c superconductors-composite wire fabrication," **51** (3) *Appl. Phys. Lett.* 203-204, July 20, 1987.

All of the claims on appeal stand rejected under 35
U.S.C.

§ 103 as unpatentable over Jin in view of Saur (Answer, page
2). We reverse this rejection for reasons which follow.

OPINION

The examiner finds that Jin discloses a method for producing an oxide-type superconducting wire comprising filling a metal tube with an oxide powder having a superconductor property, drawing the tube into a rod wire having a round cross section, and then heat treating the rod wire to sinter the oxide material (Answer, pages 2-3). The examiner finds that Jin fails to disclose cold rolling the rod wire into a flat wire where the thickness of the rod wire is reduced by at least 90% (*Id.* at page 3). Therefore the examiner applies Saur for the disclosure of a method of making a superconductor where a rod wire is deformed into a flat wire such that its thickness is reduced by at least 90% for the attendant benefit of making the superconductor into a more favorable shape for winding coils (*Id.*). The examiner

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concludes that it would have been a matter of "design choice" as to whether the reduction in thickness taught by Saur is accomplished by rolling and/or drawing (Answer, paragraph bridging pages 3-4).

Even if combined in the manner proposed by the examiner, we determine that the references would not have disclosed, taught or suggested the limitations of the claims on appeal (see the Brief, paragraph bridging pages 7-8). As admitted by the examiner on page 3 of the Answer, Jin fails to disclose any cold rolling step. Saur fails to disclose or teach any cold rolling step that *reduces* the thickness of the wire, much less the reduced thickness of about 90% as required by claim 8 on appeal. Saur teaches that the wire **34** is "flattened between pressure rolls to form the ribbon **36**" of Figure 7 and then the ribbon **36** is *drawn* "to form a *reduced* thickness ribbon" (column 3, lines 16-19, emphasis added). Accordingly, Saur teaches that drawing reduces the thickness but fails to teach that the cold rolling reduces the thickness.

The examiner calculates that the thickness is reduced by 90% from the disclosure of Saur at column 3, lines 10-19

(Answer, page 3). However, these calculations only apply to the reduction in thickness between the rod wire before cold rolling and the ribbon/flat wire after cold rolling *and* drawing (see Saur, column 3, lines 10-19). The limitation recited in claim 8 on appeal requires a flat wire such that $(t_i - t)/t_i \times 100$ is equal to or more than about 90%, where t_i is the whole thickness of the cross section of the rod wire before cold rolling (i.e., in Saur at most 0.020 inch, see column 3, line 11) and t is the whole thickness of the cold-rolled flat wire (which is not disclosed in Saur, see column 3, lines 16-17). Therefore the examiner's calculations do not address the limitation as recited in claim 8 on appeal.

For the foregoing reasons, the limitations recited in claim 8 on appeal are not disclosed, taught or suggested by the applied prior art unless, as urged by the examiner, rolling and drawing are matters of "design choice" and considered to be the "functional equivalent" of each other (Answer, page 4). However, the examiner has not presented any evidence or convincing reasons why one of ordinary skill in this art would have considered the two operations of rolling

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and drawing separately delineated by Saur to be the
"functional equivalent" of each other.

Additionally, the examiner has failed to present any evidence or convincing reasons why the range for the thickness of the oxide layer being cold rolled, as recited in claim 8 on appeal, would have been obvious to one of ordinary skill in the art (Answer, page 4). The examiner has also failed to explain how one of ordinary skill in the art would have modified the grain structure of Jin to produce the recited critical current density of claim 8 on appeal.

For the foregoing reasons, we determine that the examiner has failed to establish a *prima facie* case of obviousness based on the reference evidence. "Where the legal conclusion [of obviousness] is not supported by facts it cannot stand." *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). Accordingly, the rejection of the claims on appeal under 35 U.S.C. § 103 as unpatentable over Jin in view of Saur is reversed.

The decision of the examiner is reversed.

REVERSED

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CHUNG K. PAK)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHARLES F. WARREN)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
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THOMAS A. WALTZ)	
Administrative Patent Judge)	

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DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):
Prepared: October 13, 2000

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT